Appendix R

ALSTOM Product Demonstration

Ian Guest
(ALSTOM, United Kingdom)

Abstract

Demonstration of the latest versions of the products.

Thermal & ECLS Software Workshop

ESATAN-TMS Development Status

2008

Author: Ian Guest
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Recap of new features presented so far…..

Recent developments

- New layout for the ESATAN-TMS workbench
- Additional Geometry Building Capabilities
- Modelling Time & Temperature Dependency
- Non-Orbital (Ground based) Analysis support
- Extended Analysis Case Tree Menu Options

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Discussion of Further Developments

Presentation of further developments

- New Utilities Menu for complete thermal tool integration
  - Direct launch of ThermNV, Parametrics Manager…
- Support for new HDF result data file
  - Compatible with all of ESATAN-TMS
  - More scalable and smaller file
- Maintenance and Enhancement
  - Pre-processor error message improvement
- Improvements for transient solver SLCRNC
- ThermNV latest developments
  - Unit labels, etc

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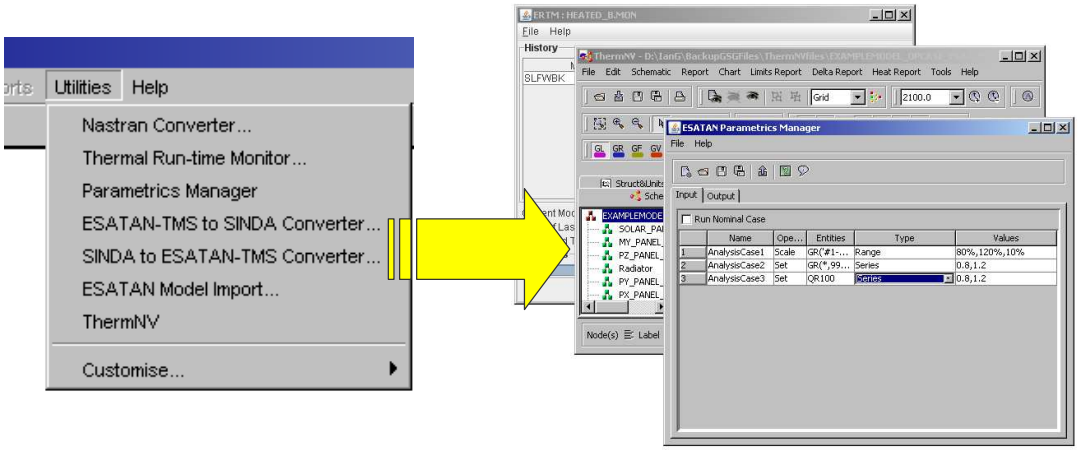
Expanded Utilities Menu

- presents a convenient way for user to quickly extend the Workbench to launch other applications
- creates an integrated environment



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Support for Binary HDF files

- Models larger and more complex → Bigger Results Files
- Implementation of new Thermal Model Data (TMD) file type
- use Hierarchical Data Format (HDF5) industry standard file format.
  - Platform independent binary format
  - Far more compact (2 orders of magnitude reduction in file size seen for large models)
  - Reduced loading times
  - Same interactive performance

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Support for Binary HDF files

- New DMPTMD output call
  - Same argument set retained

```
C To generate a TMD dump file (Binary HDF format file)
      CALL DMPTMD(' ',
     &     'NODES(L,T,C,QI,QE,QA,QS,QR), CONDUCTORS(GL,GR,GF)',
     &     CURRENT, ' ')
C
```

- Used for transfer of results data across all processes
- Automatically generated from Workbench

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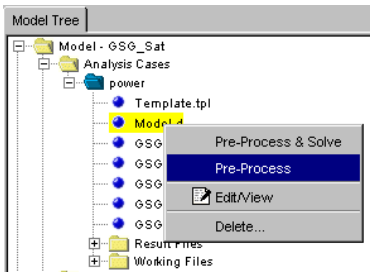
Improvement of Pre-processor Error Detection

- In order to improve creating models directly from model scripts, pre-processor error detection has been improved to detect:
  - Unbalanced parentheses
  - Duplicate node definitions
  - Missing semi colons e.g. $NODES, $CONDUCTORS



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Improved performance for transient solver SLCRNC

- Improved performance with larger time steps
- Implementation of an enhanced 'first-stab' calculation
- Quicker convergence for some models
- SLCRNC the recommended 1st choice of transient solver because:
  - Allows much larger time steps which reduces the solution time compared to SLFWBK
  - Features automatic time step control (user sets accuracy limit)
  - Dynamic definition of arithmetic nodes.

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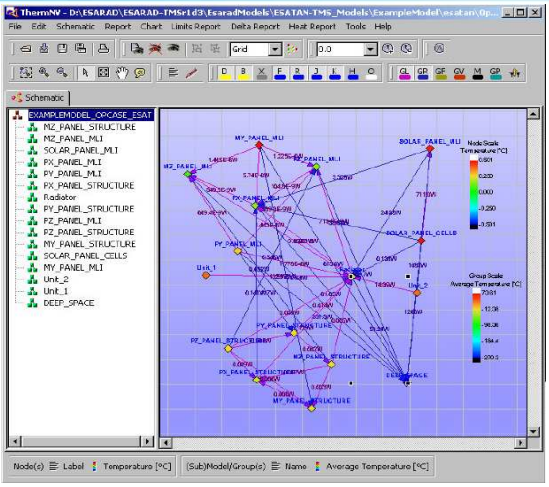
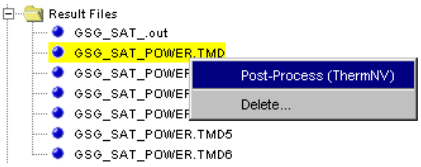
ThermNV Enhancements

- Introduced in ThermNV 3.2
  - Display of Unit Labels
  - Attribute Layout
  - Batch Runner Utility
  - New Getting Started Guide



- Introduced in ThermNV 4.0
  - Support for Binary HDF Files



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Live Demo of ESATAN-TMS

- Based around Getting Started Guide Model
- Processing an Analysis Case via the GUI
  - Running case from model tree/ relevant updates
  - Importing results into GUI
  - TMD vs GFF results files
  - Importing TMD results file into ThermNV
  - Running a Parametric Analysis via the Utilities Menu
  - Processing Parametric Results files (TMD) via the ThermNV batch runner

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